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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Merrill et al.
Serial Number:	09/329,502
Filing Date:	June 10, 1999
Examiner:	Thuan Dang
Group Art Unit:	1764
Title:	AROMATIC CONVERSION PROCESS

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SUPPLEMENTAL REPLY BRIEF

In furtherance of the appeal of the above-identified application, appellants respectfully submit this Supplemental Reply Brief in triplicate. This Reply Brief is submitted under the provisions of 37 CFR 1.193(b)(1) in response to the Response to Remand and Supplemental Examiner's Answer mailed December 5, 2003.

The Board's decision of January 29, 2003 vacated the earlier decision of September 30, 2002 in this appeal and remanded the application to the Examiner with an express authorization to the Examiner to file a supplemental answer to include the Examiner's complete position with respect to the rejections adhered to and the Examiner's complete response to

appellants' arguments. In so doing, the Decision on Remand specifically referenced appellants' arguments traversing the §103 rejections as emphasized in the Reply Brief. In view of this position taken in the Decision on Remand, appellants' arguments in this Supplemental Reply Brief will focus primarily on the arguments which were emphasized in appellants' Reply Brief.

Appellants' arguments in the Reply Brief primarily addressed two issues: (1) the effect of the hydration step in West to increase the surface area of the zeolite Y catalyst, and (2) the failure of West to disclose the use in transalkylation of a high porosity zeolite Y having in combination three characteristics — a silica/alumina ratio of 2-5, a pore size greater than 7 up to about 8 Angstroms, and surface area of no more than 500 m^2/g (or less). The arguments directed to issue (1) addressed the subject of the surface area of the transalkylation catalyst, specified to be no more than 500 m^2/g in independent claims 1, 10 and 18, about 400 m^2/g or less in dependent claims 2 and 20, or within the range of 350-400 m^2/g in dependent claim 3. Briefly, these arguments pointed out that in view of the relationship between the surface area and the porosity of a molecular sieve and the hydration of the molecular sieve in West prior to use in transalkylation, the surface area of the molecular sieve actually used as a transalkylation catalyst in West would be greater than 500 m^2/g (and obviously greater than the lesser values specified in claims 2, 3 and 21). To provide a consolidation of these arguments in one document, they will be presented below. However, before doing so, appellants' would respectfully point out that despite the invitation to the Examiner to address these arguments which, with respect to issue (1), were first raised in applicants' amendment filed October 25, 2000 and were also presented in the Appeal Brief and Reply Brief, the Supplemental Examiner's Answer fails to challenge the statement regarding the inverse relationship between the porosity and surface area for a molecular sieve as stated in the following quotation from page 9 of appellants' specification:

"As will be recognized by those skilled in the art, the surface area of a molecular sieve catalyst provides an inverse measurement of its porosity, that is, surface area is inversely proportional to its porosity."

The inverse relationship between porosity and surface area as set forth in the above-quoted statement forms the basis for the position repeatedly relied upon in applicants' arguments, that hydration of the zeolite Y catalyst in West prior to its use in transalkylation, would increase the surface area of the catalyst actually used in the transalkylation procedure in West. This position has never been challenged by the Examiner and was not challenged in the Supplemental Examiner's Answer. Accordingly, appellants would respectfully submit that this inverse relationship between surface area and porosity and the resultant increase in surface area, resulting from hydration of the catalyst in West, should be accepted as factually accurate under the decision in *In re Marzocchi*, 169 USPQ 367 (CCPA 1971)[1].

With respect to the second issue delineated above, the arguments emphasized in applicants' original Reply Brief addressed the failure of West to disclose or render obvious under 35 U.S.C. §103 the use of a zeolite Y having in combination the characteristics of silica/alumina ratio, pore size and surface area enumerated above. West discloses a number of silica/alumina ratios that appear to depend upon the particular zeolite Y chosen as the starting material, i.e. prior to hydration. For steam stabilized Y zeolites, the silica/alumina ratio is described in column 5, lines 16-18 as "between 5.0 and 6.0, typically between about 5.4 and 5.9." For the dealuminated Y zeolites used as starting materials, the dealuminated zeolites are prepared by "dealuminating Y zeolites having an overall silica-to-alumina ratio below about 6.0" (column 5,

[1] "...it is incumbent upon the Patent Office, whenever a rejection on this basis is made, to explain *why* it doubts the truth or accuracy of any statement in a supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning which is inconsistent with the contested statement." 169 USPQ 367 (CCPA 1971)

lines 27-30). With respect to LZ-210 zeolites, these are prepared "from a Y zeolite starting material and overall silica-to-alumina mole ratios between about 6.0 and about 20...Preferred LZ-210 zeolites have an overall silica-to-alumina mole ratio of about 6.1 to about 16" (column 6, lines 37-40). The portion of the West disclosure that the Examiner is understood to rely upon is found in the paragraph bridging columns 5 and 6 of West. There, West, by referring to U.S. Patent 4,401,556 and UK Patent 2,014,970 relating to UHP-Y zeolites, identifies a silica/alumina mole ratio of from 4.5 to 35 and a surface area of at least 350 m^2/g.[2] West continues in the second full paragraph of column 6 to disclose a silica-to-alumina mole ratio between 4.5 and 9, and 4.5 to 6 for a modified zeolite Y having a surface area between 500 and 700 m^2/g. This is the surface area before hydration, so the surface area of the zeolite Y actually used in the transalkylation process would be higher than the stated values.

Returning to issue (1), the unchallenged relationship between surface area and porosity dictates that when the porosity of the starting catalyst is decreased as a result of the hydration in West of the zeolite Y starting material, the surface area is necessarily increased. The calculations presented on pages 8 and 9 of appellants' primary brief, and referred to in appellants' original Reply Brief, assumed a surface area of the zeolite Y starting material of 450 m^2/g. This is consistent with what is actually disclosed in the U.S. Patent No. 4,401,556 and UK Patent No. 2,014,970, incorporated by reference into West. As stated in applicants' primary brief, the 450 m^2/g figure is for the lowest surface area zeolite Y starting material actually disclosed in the patents incorporated by reference (Example 2 of UK '970). Nowhere in West or

[2] As disclosed in appellants' primary brief on pages 8 and 9, the U.S. patent and the UK application incorporated by reference, actually disclose in the various examples surface areas ranging from 450 m^2/g to 600 m^2/g. These surface areas are before hydration, so the corresponding surface areas of the Y zeolites after hydration would be substantially higher and greater than 500 m^2/g in any case.

in the patents incorporated by reference is a description of an actual zeolite Y starting material having a surface area of 350 m^2/g.

To the extent that Example 1 of West is relied upon to show a starting material having a water content of 3 wt.%, it is noted that the water content of the hydrated zeolite Y in Example 1 was actually 21 wt.%. It further will be noted that the position taken in the Examiner's Answer that the hydrated zeolite Y could contain 3.5 wt.% water is simply inconsistent with what is actually disclosed in West, i.e. 4-25 wt.%, and greater than 4, preferably greater than 5, more preferably greater than 6, and most preferably greater than 7 wt.% as described in the last full paragraph of column 7 of West. This paragraph concludes with the statement that 5-10 wt.% appears to be most preferable.

Turning now to issue (2) as presented in appellants' primary brief and emphasized in the Reply Brief, it is possible to arrive at a zeolite Y having a surface area of less than 500 m^2/g and a silica/alumina ratio within the range of 2-5 only by selectively reconstructing the West disclosure in light of the disclosure found in applicants' specification. Contrary to the silica/alumina ratio of 2-5 of the zeolite Y called for in appellants' claims 1, 10 and 18, West discloses a much broader silica to alumina ratio of 4.5 to 35 (see the sentence bridging columns 5 and 6). While West in the second full paragraph of column 6 discloses a silica/alumina ratio of between 4.5 and 9 and between 4.5 and 6, this is for a modified Y zeolite having a surface area between 500 and 700 m^2/g. As noted previously, this is the surface area before hydration, so the actual surface area of the zeolite Y as used would be higher. Thus, in order to arrive at the high porosity zeolite Y used in appellants' invention, one must pick and choose from West to arrive at

the lower limit of the surface area, a value for water below the lower limit of the water added to the zeolite Y, and the lower limit of the broad silica/alumina ratio range in West.

As argued in appellants' original Reply Brief, one can arrive at the zeolite Y used in appellants' invention as defined in claims 1, 10 and 18 after a reading of West only by selecting the extreme limits in West of surface area, the amount of water used in hydration, and the silica/alumina ratio in a manner which is directly contrary to the teachings of the reference. The approach taken in the Supplemental Examiner's Answer, in attempting to support the rejections under 35 U.S.C. § 103 remains as before, to focus only on certain portions of West to the exclusion of a consideration of the reference as a whole to determine what it fairly suggests to one of ordinary skill in the art. As argued in the Reply Brief, and as not disputed in the Supplemental Examiner's Answer, the rejections under discussion dismisses those teachings of West leading one of ordinary skill in the art away from Appellants' invention by focusing only on selected portions of the West disclosure. As argued previously by appellants, this is directly contrary to the well-established principal that a reference disclosure must be considered in its entirety when evaluating the issue of obviousness. Reference is again made to the Federal Circuit decision in *Bausch & Lomb v. Barnes-Hind/Hydrocurve*, 230 USPQ 416, 419 (Fed. Cir. 1986) in quoting *In re Wesslau*, 353 F.2d 238, 241, 147 USPQ 391, 393 (CCPA 1965):

> It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art.

When West is considered in its entirety for what it fairly implies as to surface area of the starting material, silica/alumina ratio, and the amount of water added to the starting material, the West

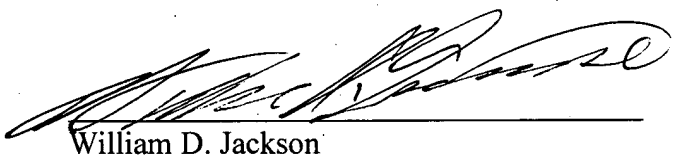
disclosure in its entirety actually leads one of ordinary skill in the art away from Appellants' invention.

It is understood that the double-patenting rejection of claims 1-6, 8-13 and 15-21 on the grounds of obvious-type double patenting has been withdrawn in view of the finding in the Response to Remand that the previously submitted terminal disclaimer is proper. Thus claims 15-17 and 21 are allowed.

For the reasons set forth in appellants' Request for Rehearing and in this Supplemental Reply Brief, the Board is respectfully requested to reconsider the original decision in this application affirming the rejections under 35 U.S.C. §103 of claims 1-6, 8-13 and 18-20 and reverse the rejection of these claims.

The Commissioner is authorized to charge any fee due in connection with the submission of this document to the Locke Liddell & Sapp LLP deposit account no. 12-1781.

Respectfully submitted,



William D. Jackson
Registration No. 20,846

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Locke Liddell & Sapp LLP
2200 Ross Avenue, Suite 2200
Dallas, TX 75201-6776
Telephone: (214) 740-8535
Facsimile: (214) 756-8535